

P&amp;G Case 9178M

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the Application of

Alessandro Corona, III et al.,

RECEIVED  
CENTRAL FAX CENTER

Serial No.: 10/789,841

MAR 20 2006

Art Unit: 1751

Filed: February 26, 2004

Examiner: John R. Hardee

For: FABRIC CARE  
COMPOSITION  
COMPRISING CATIONIC  
STARCH AND PROCESSES  
FOR MAKING SAID  
COMPOSITIONS

DECLARATION UNDER 37 C.F.R 1.132

The Assistant Commissioner for Patents

Washington, D.C. 20231

Dear Sir:

I, YONAS (NMN) GIZAW, hereby declare the following:

1. THAT, I am an inventor in the above-identified patent application;
2. THAT, I received a Ph D in 1996 from Purdue University;
3. THAT, since 1996, I have been employed by The Procter & Gamble Company;
4. THAT, since 1996 I have worked in the area of starches;
5. THAT, I am familiar with the disclosure contained in European Patent No. 596,580, with specific mention to the table on page 3, line 31 *et seq.*, and reproduced herein:

The starch products used in the examples are the following:

|   |  |
|---|--|
| Potato starch                               | - native potato starch                     |
| Amylofax OO <sup>1)</sup>                   | - cationic potato starch with DS 0.017     |
| Amylofax PW <sup>1)</sup>                   | - cationic potato starch with DS 0.035     |
| Amylofax HS <sup>1)</sup>                   | - cationic potato starch with DS 0.048     |
| Retamyl AP <sup>2)</sup>                    | - urea potato starch phosphate             |
| Farazym <sup>3)</sup>                       | - potato starch acetate with DS 0.027      |
| Perfectamyl AC <sup>3)</sup>                | - potato starch acetate with DS 0.07       |
| Solvitose Xo <sup>3)</sup>                  | - hydroxypropyl potato starch with DS 0.07 |
| Perfectamyl P <sub>10</sub> X <sup>2)</sup> | - distarch phosphate                       |

<sup>1)</sup> cationic starch

<sup>2)</sup> starch with introduced anionic substituents

<sup>3)</sup> starch with introduced nonionic substituents

5. THAT, I have been asked whether the starches listed in the above-identified table contain cationic starches that meet the following criteria from a technical perspective as understood by one skilled in the art: (1) the starch is a "starch that is chemically modified to provide the starch with a net positive charge;" and (2) the weight average molecular weight of the cationic starch is between about 50,000 to about 10,000,000 Daltons. Turning to the starches listed in the above-identified table of EP 596,580, I submit that native potato starch, Retamyl AP, Farazym, Perfectamyl AC, Solvitose Xo, and Perfectamyl P<sub>10</sub>X are not considered "cationic starch." Firstly, I submit that one skilled in the art will appreciate that native potato starch is not "starch that is chemically modified to provide the starch with a net positive charge." As for the other identified starches, I submit that only the Amylofax starches are identified as "cationic starches." See footnote 1 of the table. In contrast, Retamyl AP and Perfectamyl P<sub>10</sub>X are "anionic" per footnote 2 of the table. Farazym, Perfectamyl AC, and Solvitose Xo are "nonionic" per footnote 3 of the table. Therefore, it is my opinion, that one skilled in the art would not define "native potato starch, Retamyl AP, Farazym, Perfectamyl AC, Solvitose Xo, and Perfectamyl P<sub>10</sub>X" as a starch that is chemically modified to provide the starch with a net positive charge.
  
6. THAT, I have been asked the weight average molecular weight, at the time of this declaration, of Amylofax OO, Amylofax PW, and Amylofax HS. I hereby attest, based on information provided by suppliers and internal data generated at The Procter & Gamble Company, that the weight average molecular weight Amylofax OO is at least about

50,000,000 Daltons; for Amylofax PW is at least about 75,000,000 Daltons; and for Amylofax HS is at least about 140,000,000. Therefore, it is my opinion that the Amylofax starches listed in the above-identified table of page 3 of EP 596,580, have a weight average molecular weight of above 10,000,000 Daltons.

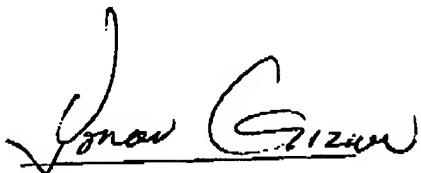
7. THAT, I have been asked as for Amylofax PW, Amylofax HS, and Amylofax 00, to compare the viscosity profile of these Amylofaxes as compared to that of "HCP 401." I point out that HCP 401 is a preferred starch of the present invention and is commercialized in the United States as co-fabric softening active in Applicant's fabric softening brand DOWNY®. At time of this Declaration, the weight average molecular weight of HCP 401 is between about 300,000 to about 500,000 Daltons. I was asked to provide a viscosity profile of the Amylofaxes and that of HCP 401. In response, I herein provided, as APPENDIX 1, a viscosity profile as determined by a RVA (Rapid Visco Analysis) – a well known technique to those skilled in the art of starches profiling the viscosity of starch via programmed temperature and time. Briefly, a starch dispersed at ambient temperature in a RVA canister and the viscosity is measured at programmed temperature and time. The temperature is raised to 95° C and held for a few minutes and then the temperature is dropped to 50° C over the course of about 15 minutes. As the graph in APPENDIX 1 demonstrates, that HCP 401 has the lowest viscosity of the starches measured while the Amylofaxes all have a very high viscosity. A peak viscosity of the HCP 401 was determined at 24 cp while the peak viscosity of all the Amylofaxes is greater than 7000 cp. This represents a nearly 300 fold increase in viscosity between the starches of the present invention verses those of the Amylofaxes. The final viscosity for HCP 401 is 3 cp whereas for the Amylofaxes, it is greater than 3000 cp. This represents about a 1000 fold difference. It is my opinion that formulating a fabric softening composition with cationic starches that yield compositions having a viscosity over 2000 cp are commercial unacceptable.
8. THAT, I have been asked to measure the viscosity of certain fabric softening compositions with HCP 401 and that of Amylofax PW and Amylofax HS. In response, I herein provide, as APPENDIX 2, the viscosity of a composition that contains a

quaternary ammonium compound and starches. A 6% solution of Amylofax PW and Amylofax HS exhibited a viscosity of 3800 cps and 620 cps, respectively. A composition that contains 6% HCP-401 exhibited a viscosity of 5 cps. When these solutions are formulated at 2% basis of starch, the viscosity of Amylofax PW and Amylofax HS is greater than 5,000 cps. It is my opinion that such viscosities are commercially unacceptable. In contrast, the HCP-401 in the same quaternary ammonium compound composition, exhibited a viscosity of 410 cps. A viscosity of 410 cps is a commercially desirable viscosity.

9. THAT, I was asked to opine on the effect of viscosity on fabric softening compositions from a commercial standpoint. In response, it is my opinion a viscosity above 2,000 cps provides a composition that is undesirable to the consumer. For example, such a composition will not readily flow from a bottle and will not have a desired flow from a dispenser (such as the DOWNY® BALL).

I, YONAS (NMN) GIZAW, declare all statements made herein are true to the best of my knowledge, or if made upon information and belief, are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Further Declarant sayeth not.



YONAS GIZAW

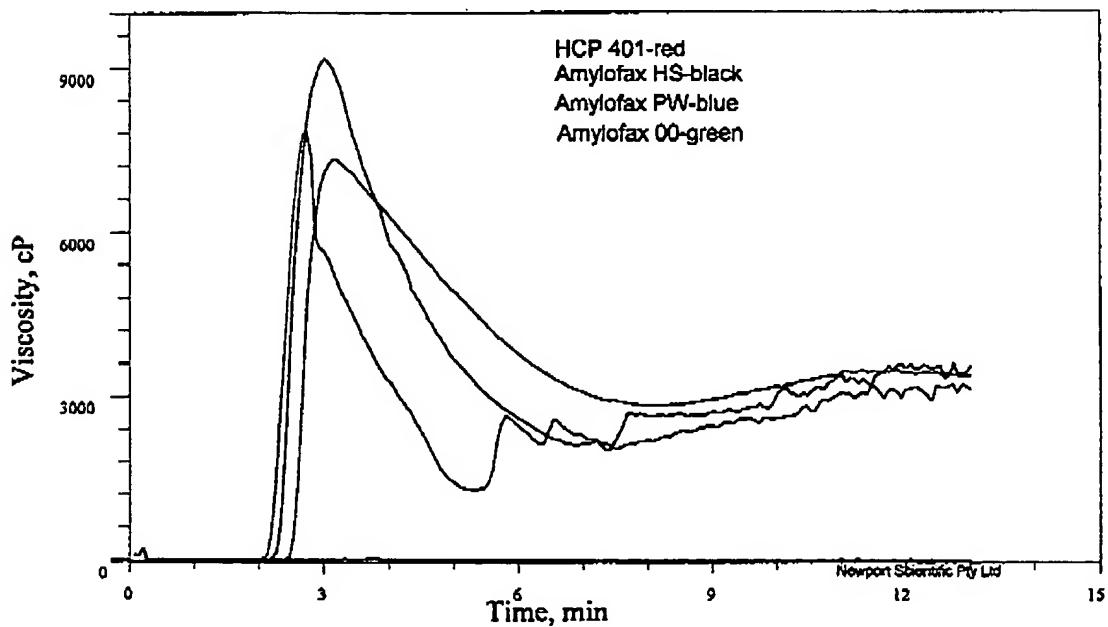
Date: 03-20-2006

## APPENDIX 1

Viscosity Profiles of Amylofax vs. HCP 401**Viscosity Profiles**

| Sample      | Peak, cP | Trough, cP | Breakdown | Final, cP | Setback | P Time, min | P Temp, °C |
|-------------|----------|------------|-----------|-----------|---------|-------------|------------|
| HCP 401     | 24       | -4         | 28        | 3         | 7       | 3.87        | 50.15      |
| Amylofax PW | 9174     | 2024       | 7150      | 3545      | 1521    | 3.00        | 52.90      |
| Amylofax HS | 7855     | 2052       | 5803      | 3138      | 1086    | 2.73        | 52.85      |
| Amylofax 00 | 7331     | 2839       | 4492      | 3375      | 536     | 3.13        | 51.05      |

## Viscosity Profiles



## APPENDIX 2

Comparison of viscosities of formulations comprising Amylofax vs. HCP 401

| Formula Composition                   | viscosity<br>(cps) | Dose in<br>rinse (g) |
|---------------------------------------|--------------------|----------------------|
| 6% Amylofax PW solution               | 3800cps            | --                   |
| 14% FSA <sup>1</sup> , 2% Amylofax PW | >5000cps           | 30g                  |
| 6% Amylofax HS solution               | 620cps             | --                   |
| 14% FSA <sup>1</sup> , 2% Amylofax HS | >5000cps           | 30g                  |
| 6% HCP 401 solution                   | 5cps               | --                   |
| 14% FSA <sup>1</sup> , 2% HCP 401     | 410cps             | 30g                  |
| 14% FSA <sup>1</sup> , nil starch     | 30cps              | 30g                  |

<sup>1</sup> FSA-Mono and di-ester mixture of N, N di (tallowyloxyethyl)-N, N dimethylammonium chloride.